

EMC3589 Wi-Fi/BLE module

Built-in Arm Cortex-M55 & Arm Cortex-M23 multi-core processor, Flash memory
Support 2.4 G/5 GHz dual-band Wi-Fi, BLE 5.0, rich peripherals

Version: 0.1

Date: 2026-03-16

No. : DS0242EN

Abstract

- **Voltage input: DC 3.0 V ~ 3.6 V**
- **Operating Temperature: -40 °C ~ 105 °C**
- **Processor: multi-core processor RTL8711 DAF**
Performance Core KM4: ARM Cortex-m55 at 345 MHz
Power efficiency core KM0: Arm Cortex-M23 at 115 MHz
- **Memory**
512KB SRAM: support system stack and application functions
4MB XIP Flash
- **Wi-Fi**
IEEE 802.11 a/b/g/n 1x12.4 G/5 GHz dual-band
802.11 n MCS0 ~ 7,40 MHz bandwidth
Up to 150Mbps
Power-saving support
- **Bluetooth**
5.0 compliant Bluetooth low energy BLE
Bluetooth LE 1m and 2M
Internal CLASS1, CLASS2, and class3pa integration
Maximum transmit power: 10dBm, typical: 8dBm
Sensitivity: -99dbm@1e1m, -96dbm@LE2M
Wi-Fi and BLE time division multiplexing, sharing the same PA and antenna
- **Security**
Support for secure startup
Support for hardware encryption engine
Support whole or part of the Flash decryption

technology

Anti-read mechanism: SWD/JTAG interface protection

Support for hardware random number generation (TRNG)

- **Rich peripherals**

18x GPIO

1 x SPI

2x UART

1x USB

1x SDIO

- **Interface and dimensions**

Maintain pin compatibility with similarly packaged modules

IPEX connector with external antenna is supported

18mm x 33mm x 3mm, stamp hole, PCB board antenna

18mm x 23.5 mm x 3mm, stamp hole, IPEX external antenna

- **Typical applications**

Smart appliances

Smart electricians

Industrial Automation



● Order code

Order code	Instructions
EMC3589-DZJ7	PCB board antenna, operating temperature: -40 ~ 105 °C, 18mm x 33mm x 3mm
EMC3589-SZJ7	IPEX external antenna, operating temperature: -40 ~ 105 °C, 18mm x 23.5mm x 3mm

Serial Order Code

Example	EMC	3	58	9	- S	Z	J	7	-TR
Product range									
EMC = Internet of Things Wi-Fi/BLE Combo Module									
Type of product									
3 = Welding Wireless module									
Typical target applications and functions									
58 = IOT applications 58 series									
External dimensions, enhanced functionality									
9 = 18mm x 23.5mm, 2x 6pins 2.0 pitch stamp hole + 9pins 2.0 pitch, stamp hole									
RFI radio frequency interface									
D = 2.4 G/5 GHz dual-band PCB board antenna S = 2.4 G/5 GHz dual-band IPEX external antenna connector									
PSRAM capacity (optional)									
Z = No PSRAM									
Flash capacity									
J = 4 MB of Flash storage									
Temperature range									
7 = -40 °C ~ 105 °C									
Optional									
TR = Reel packaging (pallet is used by default)									

For a list of all relevant features (e. g. packaging, minimum order quantity, etc.) and other information, please contact your nearest MXCHIP point of sale and agent.

Accessories

Order code	Instructions
MXKIT-Base	Development Board for all EMC3589 modules
MXKIT-CORE-3589	Development Board core board for EMC3589, including EMC3589 module. Use with MXKIT-Base
FX-3589	EMC3589 manufacturing fixtures with accompanying boards: MXKIT-Base, MXKIT-CORE-3589

Description of the version update

Date	Version	Update
2026-03-16	0.1	Initial

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Data in documentation below version 1.0 is for reference only and may still be adjusted and modified before final production.

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1. Introduction to modules

EMC3589 is a series of high-performance modules mainly used in the Internet of things. It has an ultra-high integrated dual-core microcontroller, supports 2.4 G/5 GHz dual-band Wi-Fi and BLE 5.0 wireless communication technology, and contains large-capacity Flash, SRAM for a variety of complex applications.

The high-performance core is a 32-bit core with a main frequency of up to 345 MHz. Based on the latest ARM v8-M architecture, it not only has low power consumption, but also can complete floating-point operations, DSP instruction processing, etc. , thus, it can efficiently complete the audio codec algorithm and deep learning model matching. The energy-efficient core operates at 115 MHz and provides a simplified instruction set for ultra-low power applications, enabling the system to stand-by for extended periods of time.

2.4 G/5 GHz dual-band WI-FI promises to provide a reliable internet connection at all times, and BLE 5.0 technology not only makes it easy for users to quickly configure their products, local remote control also enables intelligent networking of a large number of local devices through Mesh technology.

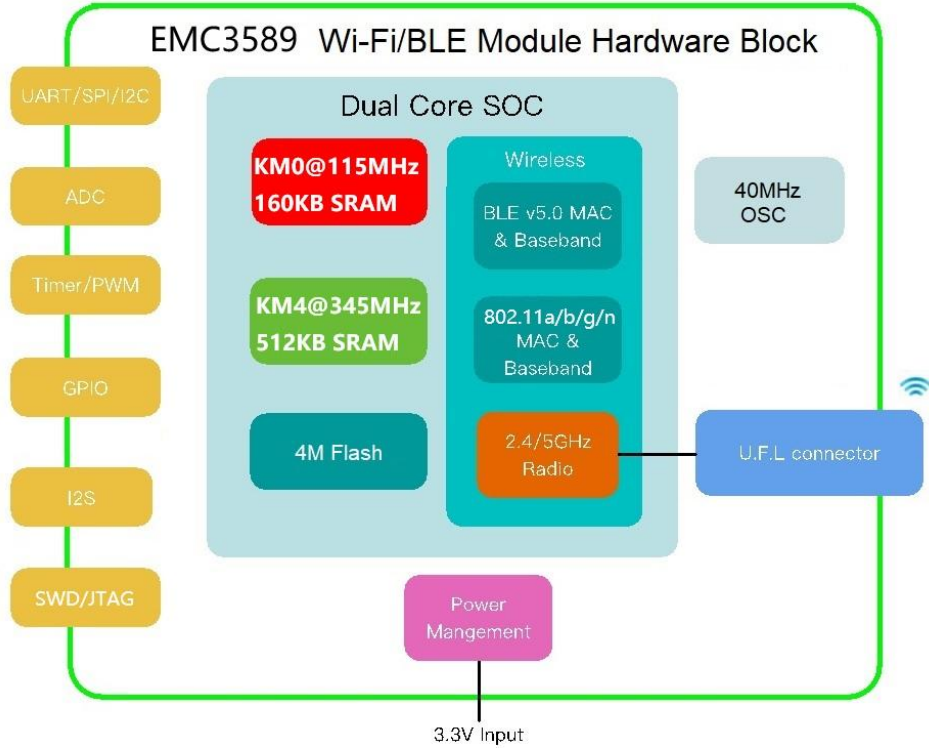
EMC3589 module is powered by 3.3 V single power supply and supports stamp hole installation mode, which is suitable for various intelligent home appliances application scenarios.

MXCHIP provides MXOS software platform to support the development of EMC3589 series modules, which provides an efficient development environment, access protocol stacks of major internet of things cloud services, rich sample programs and various typical applications.

The following is the hardware block diagram of EMC3589 module, including:

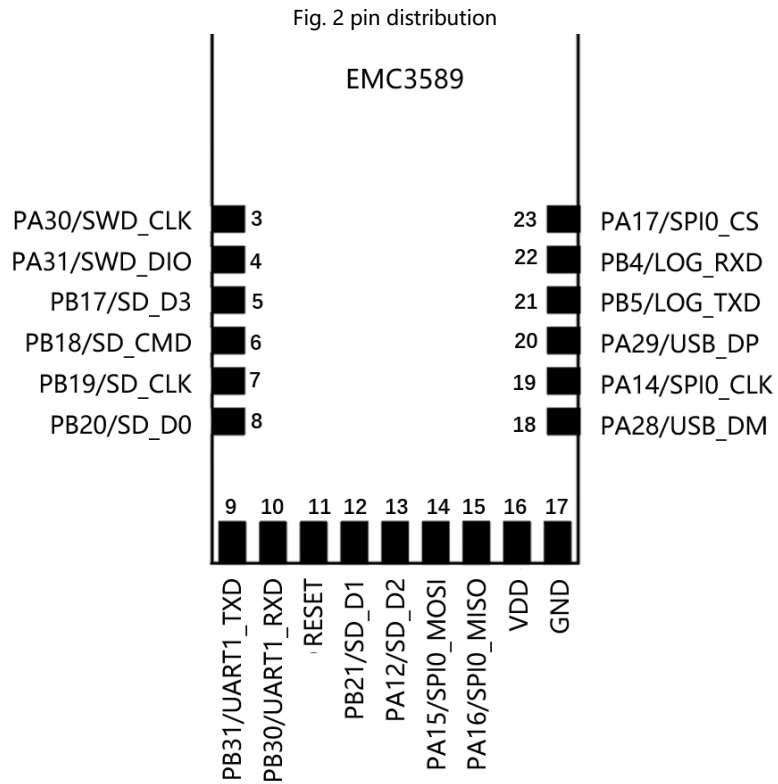
- WI-FI microcontroller RTL8711DAF
- IPEX external antenna (optional PCB board antenna)
- Power and communication interface

Fig. 1 hardware interface diagram



2. PIN definition

2.1. PIN distribution



2.2. PIN definition

Table 1 pin definitions

Pin No.	Name	Type I/O	Recommended Way of use
3	PA30	I/O	SWD: SWD debugging
4	PA31	I/O	SWD: SWD debugging
5	PB17	I/O	SD
6	PB18	I/O	SD
7	PB19	I/O	SD
8	PB20	I/O	SD
9	PB31	I/O	UART1, application serial port
10	PB30	I/O	UART1, application serial port
11	REST	I/O	Reset
12	PB21	I/O	SD
13	PA12	I/O	SD
14	PA15	I/O	SPI0
15	PA16	I/O	SPI0
16	VDD	I/O	VDD
17	GND	I/O	GND
18	PA28	I/O	USB

Pin No.	Name	Type I/O	Recommended Way of use
19	PA14	I/O	SPI0
20	PA29	I/O	USB
21	PB5	I/O	Log, debug/burn serial port
22	PB4	I/O	Log, debug/burn serial port
23	PA17	I/O	SPI0

3. Electrical parameters

3.1. Absolute maximum parameters

Modules operating outside the absolute maximum rating may cause permanent damage. At the same time, long-term exposure to the maximum rating conditions will affect the reliability of the module.

Table 2 absolute maximum parameters: voltage

Symbol	Ratings	Min	Max	Unit
VDD-VSS	Voltage	-0.3	3.6	V
Vin	Input voltage on any other pin	VSS -0.3	VDD + 0.3	V

Table 3 working parameters: voltage and current

Symbol	Note	Specification			
		Min.	Min	Max.	Unit
VDD	Voltage	2.97	3.3	3.63	V
IVDD	3.3 V Rating Current (with internal regulator and integrated CMOS PA)	-	-	450	Ma

DC characteristics of Digital IO

Electrical characteristics of the module digital IO port under 3.3 V power supply.

Table 4 operating parameters: DC characteristics of digital IO port (3.3 V)

Symbol	Note	Conditions	Specification			
			Min.	Min	Max.	Unit
Vih	Input-high Voltage	LVTTL	2	-	-	V
Vil	Input-low Voltage	LVTTL	-0.3	-	0.8	V
Voh	Output-high Voltage	LVTTL	2.8	-	-	V
Vol	Output-low Voltage	LVTTL	-	-	0.48	V

3.2. Typical application power consumption

Module current test environment based on VDD = 3.3 V, normal office application environment test (different test environment will be measured in different values) .

Table 5 power consumption of typical applications

Frequency Band	Condition	Typical Value	Unit
2.4 g	1T-HT MCS7/BW40M (17dBm)	238	Ma
	1T-HT MCS0/BW40M (19dBm)	271	
	1T-HT MCS7/BW20M (17dBm)	230	
	1T-HT MCS0/BW20M (19dBm)	262	
	1T-OFDM	243	

Frequency Band	Condition	Typical Value	Unit
	1T-OFDM	262	
	1T-CCK1M (20dBm)	288	
	1R-HT MCS7/BW40M (pin = -60dbm)	48	
	1R-HT MCS7/BW20M (pin = -60 dbm)	44	
	1r-ofdm54m (pin = -60 dbm)	43	
	1R-CCK1M (20dBm)	42	
	Say Idle	41	
	Beacon Mode	27.5	
	RF Standby	28	
5G	1T-HT MCS7/BW40M (15dBm)	280	Ma
	1T-HT MCS0/BW40M (18dBm)	325	
	1T-HT MCS7/BW20M (15dBm)	283	
	1T-HT MCS0/BW20M (18dBm)	323	
	1T-OFDM	295	
	6m (18dBm)	328	
	1R-HT MCS7/BW40M (pin = -60dbm)	52	
	1R-HT MCS7/BW20M (pin = -60 dbm)	48	
	1r-ofdm54m (pin = -60 dbm)	47	
	Say Idle	45	
	Beacon Mode	29	
	RF Standby	28	

3.3. Temperature

Table 6 operating parameters: DC characteristics of Digital IO (3.3 V)

Symbol	Ratings	Max	Unit
TSTG	Storage temperature	-55to + 125	°C
Twork	Ambient Operating Temperature	-40 ~ 105	°C
Tjun	Junction Temperature	0TO + 125	°C

3.4. Electrostatic discharge

Table 7 electrostatic discharge parameters

Symbols	Name	Name	Grade	Maximum	Units
VESD (HBM)	Electrostatic discharge voltage (mannequin)	TA = + 25 °C obeys JESD22-A114	2	2000	V

VESD (CDM)	Electrostatic discharge voltage (discharge device model)	TA = + 25 °C obeys JESD22-C101	II	500	
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3.5. RF parameters

3.5.1. Basic RF parameters

Table 8 basic RF parameters

Item		Specification	
Operating Frequency		2.4 G Band: 2400 ~ 2483.5 MHz 5.1 G Band: 5150-5350 MHz 5.8 G Band: 5725-5850 MHz	
Specification	Wi-Fi	IEEE802.11b/g/n (2.4 G) , 802.11a/n (5 g)	
	Bluetooth	Bluetooth 5.0	
Modulation Type	Wi-Fi	11B: DBPSK, DQPSK, CCK for DSSS 11G/A/N: BPSK, QPSK, 16QAM, 64QAM for OFDM 11G: BPSK, QPSK, 16QAM, 64QAM for OFDM 11N: MCS0 ~ 7, OFDM	
	Bluetooth	GFSK	
Data Rates	Wi-Fi	20 MHz	11B: 1,2,5.5, and 11Mbps 11G/A: 6,9,12,18,24,36,48,54 Mbps 11N: MCS0 ~ 7, up to 72Mbps
		40 MHz	11N (2.4 G & 5 g) : MCS0 ~ 7, up to 150Mbps
	Bluetooth	2 MHz	1MBPS, 2Mbps (BT 5.0)
Antenna type		One U. F. L connector for external antenna	
Antenna Interface		1T1R, single stream	

Note: the following TX test data are typically recorded at room temperature for about 20 seconds.

IEEE802.11B mode

Table 9 transmitting and receiving characteristic parameters of IEEE 802.11 b mode

Item	Description			
Mode	IEEE802.11b			
Channel	Ch1 T O CH13			
Data Rates	1,2,5.5,11Mbps			
TX Characteristics	Min.	Typical.	Max.	Unit
Transmitter Output Power				

11b Target Power@1Mbps	15	17	18	dBm
11b Target Power@11Mbps	15	17	18	dBm
Spectrum Mask@target power				
FC +/-11 MHz to +/-22 MHz	-	-	-30	DB
FC > +/-22 MHz	-	-	-50	DB
Frequency Error	-10	-2	+ 10	ppm
Constellation Error (Peak EVM)@target power				
1-11 Mbps	-	-	35% (or -11 db)	
Rx Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				
1 mbps (fer ≤8%)	-98	-	-	dBm
11 Mbps (fer ≤8%)	-88	-	-	dBm

IEEE 802.11 g mode

Table 10 transmitting and receiving characteristic parameters of IEEE802.11 g mode

Item	Description			
Mode	IEEE802.11g			
Channel	Ch1 T O CH13			
Data Rates	6,9,12,18,24,36,48,54Mbps			
TX Characteristics	Min.	Typical.	Max.	Unit
Transmitter Output Power				
11G Target Power@6Mbps	15	16	17.5	dBm
11G Target Power@54Mbps	15	16	17.5	dBm
Spectrum Mask@target power				
FC +/-11 MHz	-	-	-20	DB
FC +/-20 MHz	-	-	-28	DB
FC > +/-30 MHz			-40	DB
Frequency Error	-10	-2	+ 10	ppm
Constellation Error (Peak EVM)@target power				
6Mbps	-	-30	-5	dBm
54Mbps	-	-30	-25	dBm
Rx Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				
6Mbps (Fer ≤10%)	-93	-	-	dBm
54 mbps (Fer ≤10%)	-76	-	-	dBm

IEEE802.11 N-HT20(2.4 g) mode

Table 11 transmitting and receiving characteristics of IEEE802.11N-HT20

Item	Description			
Mode	IEEE802.11 N HT20			
Channel	Ch1 T O CH13			
Data Rates	MCS0/1/2/3/4/5/6/7, up to 72.2 Mbps			
TX Characteristics	Min.	Typical.	Max.	Unit
Transmitter Output Power				
11n Target Power@MCS0	13	14	16	dBm
11n Target Power@MCS7	13	14	16	dBm
Spectrum Mask@target power				
FC +/-11 MHz	-	-	-20	DB
FC +/-20 MHz	-	-	-28	DB
FC > +/-30 MHz			-45	DB
Frequency Error	-10	-2	+ 10	ppm
Constellation Error (Peak EVM)@target power				
MCS0	-	-30	-5	dBm
MCS7	-	-31	-27	dBm
Rx Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				
MCS0(Fer ≤10%)	-92	-	-	dBm
MCS7(fer ≤10%)	-73	-	-	dBm

IEEE802.11 N-HT40(2.4 g) mode

Table 12 IEEE802.11N-HT40 mode transceiver characteristics

Item	Description			
Mode	IEEE802.11N HT40			
Channel	Ch1 T O CH13			
Data Rates	MCS0/1/2/3/4/5/6/7, up to 150Mbps			
TX Characteristics	Min.	Typical.	Max.	Unit
Transmitter Output Power				
11n Target Power@MCS0	12	13	14.5	dBm
11n Target Power@MCS7	12	13	14.5	dBm
Spectrum Mask@target power				
FC +/-22 MHz	-	-	-20	DB
FC +/-40 MHz	-	-	-28	DB
FC > +/-60 MHz	-	-	-45	DB

Frequency Error	-10	-2	+ 10	ppm
Constellation Error (Peak EVM)@target power				
MCS0	-	-30	-5	dBm
MCS7	-	-32	-27	dBm
Rx Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				
MCS0(Fer ≤10%)	-90	-	-	dBm
MCS7(fer ≤10%)	-71	-	-	dBm

IEEE802.11A

Table 13 transmitting and receiving characteristics of IEEE802.11a mode

Item	Description			
Mode	IEEE802.11A			
Channel	CH36 to CH165			
Data Rates	6,9,12,18,24,36,48,54Mbps			
TX Characteristics	Min.	Typical.	Max.	Unit
Transmitter Output Power				
11a Target Power@6Mbps	12.5	14	15.5	dBm
11a Target Power@54Mbps	11.5	13	14.5	dBm
Spectrum Mask@target power				
FC +/-11 MHz	-	-	-20	DBR
FC +/-20 mhz	-	-	-28	DBR
FC > +/-30 MHz			-40	DBR
Frequency Error	-10	-2	+ 10	ppm
Constellation Error (Peak EVM)@target power				
MCS0	-	-29	-5	dBm
MCS7	-	-29	-25	dBm
Rx Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				
6Mbps (Fer ≤10%)	-92	-	-	dBm
54 mbps (Fer ≤10%)	-74	-	-	dBm

IEEE802.11 N Ht20(5G) mode

Table 14 IEEE802.11N-HT20(5G) mode transceiver characteristics

Item	Description
Mode	IEEE802.11N (5G) HT20
Channel	CH36 to CH165
Data Rates	MCS0/1/2/3/4/5/6/7, max 72.2 Mbps

TX Characteristics	Min.	Typical.	Max.	Unit
Transmitter Output Power				
11n Target Power@MCS0	11	13	14.5	dBm
11n Target Power@MCS7	11	12	13.5	dBm
Spectrum Mask@target power				
FC +/-11 MHz	-	-	-20	DB
FC +/-20 MHz	-	-	-28	DB
FC > +/-30 MHz	-	-	-45	DB
Frequency Error	-10	-2	+ 10	ppm
Constellation Error (Peak EVM)@target power				
MCS0	-	-28	-5	dBm
MCS7	-	-30	-27	dBm
Rx Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				
MCS0(Fer ≤10%)	-92	-	-	dBm
MCS7(fer ≤10%)	-72	-	-	dBm

IEEE802.11 N HT40(5G) mode

Table 15 IEEE802.11N-HT40(5G) mode transceiver characteristics

Item	Description			
Mode	IEEE802.11N (5G) HT40			
Channel	CH36 to CH165			
Data Rates	MCS0/1/2/3/4/5/6/7, Max 150Mbps			
TX Characteristics	Min.	Typical.	Max.	Unit
Transmitter Output Power				
11n Target Power@MCS0	11.5	13	14.5	dBm
11n Target Power@MCS7	11	12	13.5	dBm
Spectrum Mask@target power				
FC +/-11 MHz	-	-	-20	DBR
FC +/-20 MHz	-	-	-28	DBR
FC > +/-30 MHz	-	-	-45	DBR
Frequency Error	-10	-2	+ 10	ppm
Constellation Error (Peak EVM)@target power				
MCS0	-	-28	-5	dBm
MCS7	-	-30	-27	dBm
Rx Characteristics	Min.	Typical.	Max.	Unit
Minimum Input Level Sensitivity				

MCS0(Fer ≤10%)	-89	-	-	dBm
MCS7(fer ≤10%)	-69	-	-	dBm

Bluetooth radio parameters

Table 16 EMC3589 Ble5.0 TX/RX features

Item	Data Rate	Min	Min	Max	Unit
Power	LE	6	8	10	dBm
Power	LE	6	8	10	dBm
Frequency Drift Error	LE	-50	-7	50	KHz
Frequency Drift Error	LE	-50	-7	50	KHz
Carrier frequency offset and drift at NOC:					
Δ FN MAX	LE	-150	5.8	150	KHz
\$100,000,000	LE		3.7	50	KHz
1-10 million	LE		4.6	20	KHz
50-50 million	LE		0.9	20	KHz
Modulation characteristics:					
Δ F1AVG	LE	225	247	275	KHz
Δ F2AVG	LE	185	225	275	KHz
Δ F2AVG/Δ F1AVG	LE	0.8	0.92		KHz
Δ F2MAX	LE	185	231		KHz
Rx Characteristics					
Minimum Sensitivity Per ≤30.8%	LE	-99	-	-	dBm
Minimum Sensitivity Per ≤30.8%	LE	-96	-	-	dBm

4. Antenna information

EMC3589 has PCB board antenna and external IPEX antenna specifications, please refer to the order code order. Modules with PCB on-board antennas do not solder IPEX antenna connectors.

4.1. PCB on-board antenna parameters and usage

4.1.1. Parameters of PCB board antenna

Table 17 PCB on-board antenna parameters for EMC3589(2.4 GHz)

Item	Min.	Min	Max.	Unit
Frequency	2400		2500	MHz
Impedance		50		Ω
VSWR			2	
Gain	- 0.37DBI			
Efficiency	47%			

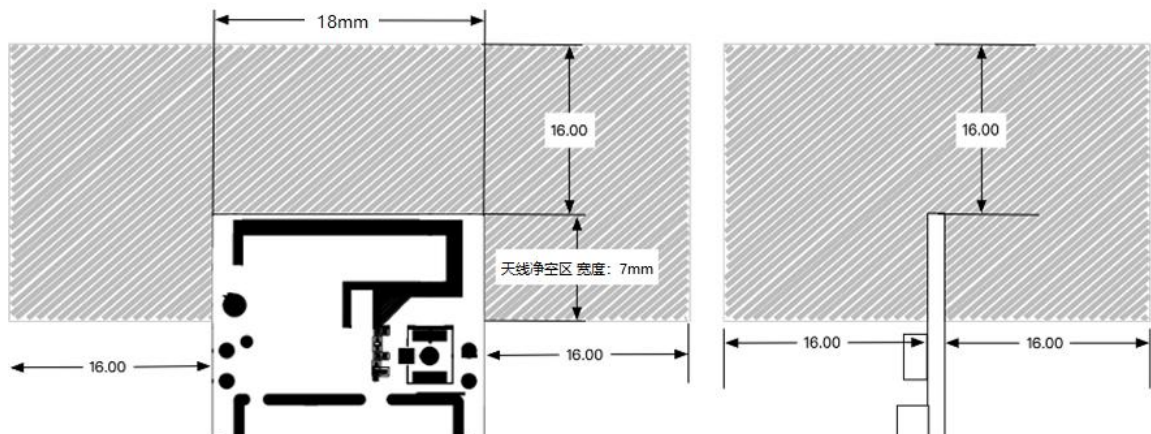
Table 18 PCB board antenna parameters (5 GHz band) for EMC3589

Item	Min.	Min	Max.	Unit
Frequency	5100		5800	MHz
Impedance		50		Ω
VSWR			2	
Gain	- 0.69 DBI			
Efficiency	42%			

4.1.2. Key points in application of PCB board antenna

When using the PCB board antenna on the module, ensure that the distance between the motherboard PCB and other metal devices, connectors, PCB vias, wiring, and copper cladding is at least 16 mm. The shaded areas should be kept away from metal components, sensors, sources of interference, and other materials that could interfere with the signal.

Fig. 3 minimum clearance area of PCB antenna (in MM)

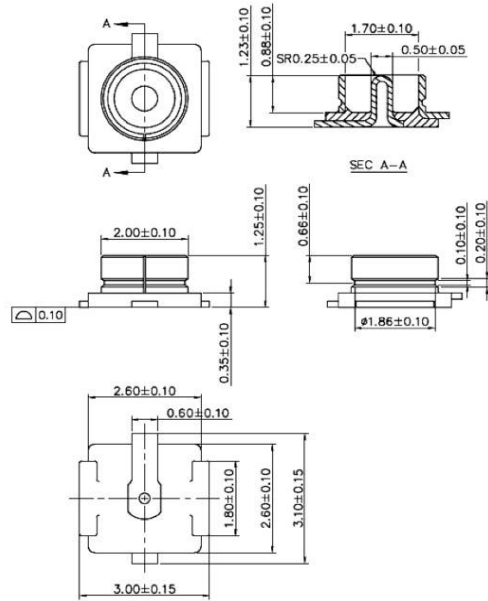


4.2. Introduction of IPEX external antenna

EMC3589 provides IPEX external antenna module for users to choose. Users can choose 2.4 GHz/5 GHz dual-band compatible antennas with different sizes and gain less than 2DBI according to the application environment.

External IPEX antenna block size:

Fig. 4 size of external antenna connector



5. Final assembly size and PCB package

5.1. Final assembly dimensions

Fig. 5 the Assembly dimension of PCB board antenna module (in mm, error ± 0.1 , outer dimension error ± 0.2)

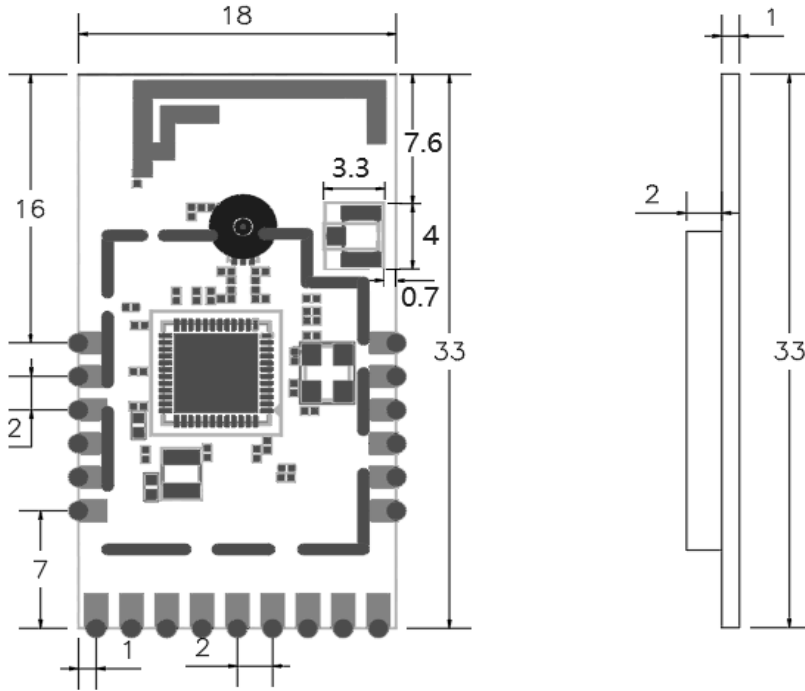
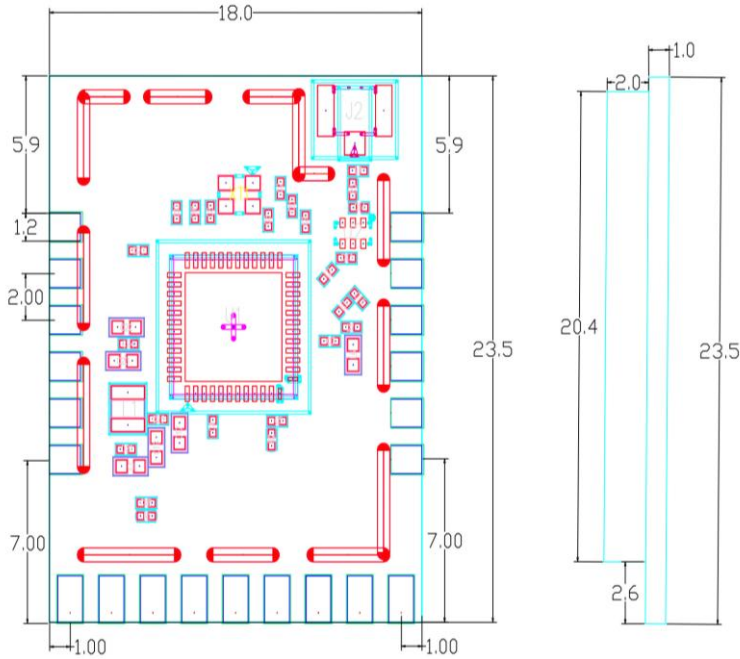


Fig. 6 assembly dimension of IPEX external antenna module (in mm, error ± 0.1 , outer dimension error ± 0.2)



5.2. Recommended package diagram

Fig. 7 stamp hole package dimensions of PCB board antenna module (mounting pad, in mm)

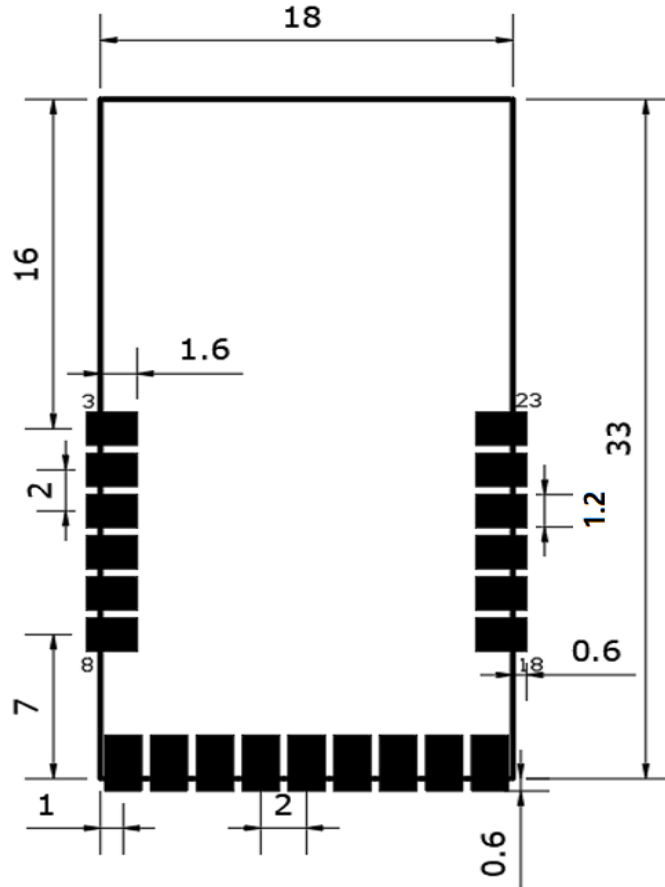
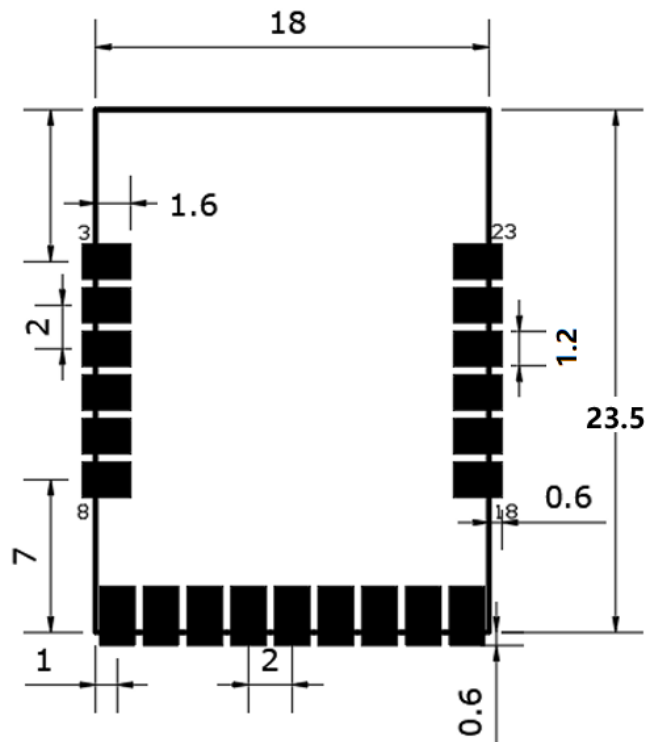


Fig. 8 stamp hole package dimensions of IPEX external antenna module (mounting pad, in mm)



6. Production Guide

MXCHIP factory stamp mouth packaging module must be SMT machine placement, module humidity sensitive grade is MSL3, unpacking more than a fixed time before placement to bake the module.

- SMT patches require instrumentation
 - (1) reflow mounter
 - (2) Aoi Tester
 - (3)6-8mm nozzle
- Baking equipment:
 - (1) cabinet oven
 - (2) anti-static, high temperature tray
 - (3) antistatic and heat-resistant gloves

The storage conditions of the modules manufactured by MXCHIP are as follows:

- Moisture-proof bags must be stored at $< 30\text{ }^{\circ}\text{C}$ and $< 85\% \text{ Rh}$.
- The humidity indicator card is enclosed in a sealed package.

Fig. 9 humidity card



If the humidity card is pink after the module is disassembled, it needs to be baked.

The baking parameters are as follows:

- Baking temperature: $120\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$; baking time: 4 hours;
- Alarm temperature was set at $130\text{ }^{\circ}\text{C}$;
- After cooling $< 36\text{ }^{\circ}\text{C}$ under natural conditions, SMT patches can be performed;
- Drying times: 1 time;
- If there is no welding more than 12 hours after baking, bake again.

If the unpacking time is more than 3 months, it is prohibited to use SMT process to solder this batch of modules, because the PCB sink gold process, more than 3 months pad oxidation is serious, SMT patch is likely to lead to virtual solder, leakage solder, we will not be responsible for any problems caused by this

Before Smt Mount, please protect the module with ESD (electrostatic discharge, electrostatic discharge)

Please SMT according to the reflow soldering curve, peak temperature 250 °C;

In order to ensure the qualified rate of reflow soldering, please sample 10% products for visual inspection and AOI test to ensure the rationality of furnace temperature control, device adsorption mode and placement mode It is recommended to take 5-10 chips per hour for visual inspection and Aoi test for mass production.

6.1. Cautions

- In the production process of each station operator must wear electrostatic gloves;
- Baking time should not exceed the baking time
- Do not add explosive, flammable, corrosive substances when baking
- When baking, the module should be placed in the oven with a high temperature tray to keep air circulation between each module and avoid direct contact between the module and the inner wall of the oven
 - When baking, please close the door of the oven, ensure the oven closed, prevent temperature leakage, affect the baking effect;
 - Don't open the oven door when the oven is running. If it must be opened, shorten the opening time as much as possible
 - After baking, need to wait for the module natural cooling to < 36 °C, can wear electrostatic gloves out, so as not to burn;
 - When operating, prevent the bottom of the module from getting wet or dirty

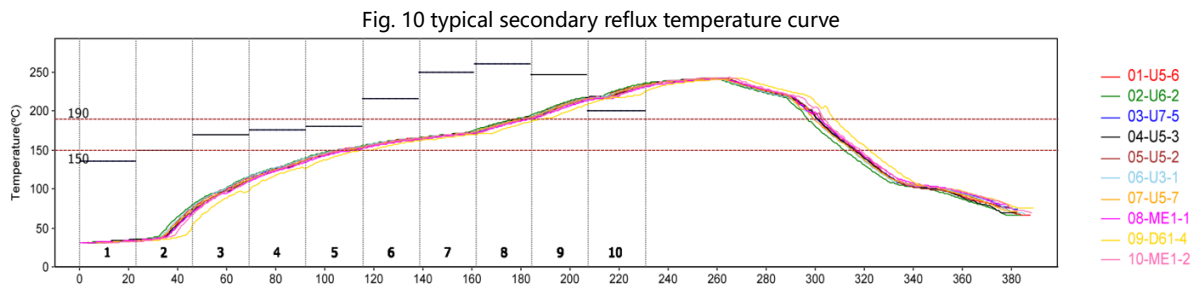
MXCHIP factory module temperature and humidity control level 3, storage and baking conditions according to IPC/JEDEC J-STD-020.

6.2. Secondary reflux temperature curve

Recommended solder paste type: SAC305, lead free. No more than 2 reflows. The peak temperature does not exceed 245 °C. Here is a typical furnace temperature curve setting.

Table 19 typical furnace temperature settings

Furnace	Z1	Z 2	Z 3	Z 4	Z 5	Z 6	Z 7	Z 8	Z 9	Z10
Upper	135	150	170	175	180	215	250	260	247	200
Setting of lower	135	150	170	175	180	215	250	260	247	200



- 30 °C-150 °C preheating: 0-3 °C/S, typical: 1.2 °C/s
- 150 °C-190 °C immersion time: 60-100 s, Typ. : 72 s

- Peak Temperature: 245 °C, typical: 242 °C
- Time above 220 °C: 50-90 seconds, typical: 70 seconds
- 217 °C cooling rate: -3 -0 °C/S, typical: -2.0 °C/s

6.3. Storage conditions

Fig. 11 schematic diagram of storage condition



CAUTION
This bag contains
MOISTURE-SENSITIVE DEVICES

LEVEL
3

If Blank, see adjacent bar code label

1. Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)
2. Peak package body temperature: 260 °C
If Blank, see adjacent bar code label
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must
 - a) Mounted within: 168 hrs. of factory conditions
If Blank, see adjacent bar code label
≤30°C/60%RH, OR
 - b) Stored at <10% RH
4. Devices require bake, before mounting, if:
 - a) Humidity Indicator Card is > 10% when read at 23 ± 5°C
 - b) 3a or 3b not met.
5. If baking is required, devices may be baked for 48 hrs. at 125±5°C

Note: If device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure

Bag Seal Date: _____
If Blank, see adjacent bar code label

Note: Level and body temperature defined by IPC/JEDEC J-STD-020

7. Label information

Fig. 12 schematic diagram of labels



1. MXCHIP: Company logo
2. EMC3589-S: model number
3. CMIIT ID: SRRC Model Authorization ID
4. ZJ7: sub-model, see order code description page
5. X2435: Production Lot Number
6. 849DC2A3C248: module MAC address
7. QR code: Module MAC address

Note: Due to the production batch and version and other reasons, the above labels are for reference only, please refer to the material.

8. Sales and technical support information

If you need to consult or purchase this product, please call Shanghai MXCHIP Information Technology Co., Ltd. during office hours.

Office hours:

Monday to Friday: 9 a.m. to 12 p.m. ; 13 p.m. to 18 p.m

Tel: + 86-21-52655026

Address: 9/F, Lane 5,2145 Jinshajiang Road, Putuo District, Shanghai

ZIP code: 200333

Email: sales@mxchip.com